

REPORT ON BARNACLES OF PERU, COLLECTED BY DR.
R. E. COKER AND OTHERS.

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Our knowledge of Peruvian Cirripedia is chiefly due to Charles Darwin's "Monograph on the Subclass Cirripedia," 1852, 1854, and to a few records made by W. Weltner of specimens in the Museum für Naturkunde in Berlin. The specimens collected by Dr. R. E. Coker and Dr. W. H. Jones, U. S. Navy, have been studied in the preparation of this report, which has been prepared at the request of the Ministerio de Fomento of the Peruvian Government as a contribution to the knowledge of the aquatic resources of Peru.

No parasitic cirripedes, or forms commensal on crabs, have been found, although specially looked for on the crustacea collected by Dr. Coker. The apparent absence of such species on the west coast of North and South America is remarkable. Further collecting will doubtless add largely to the list of littoral barnacles, as well as to the deep-water fauna, of which nothing is now known.

The figures and descriptions are all from Peruvian examples. The occasion has been taken to offer sufficiently enlarged figures to show the details of the plates of *Balanidæ*. It is hoped they will make the identification of specimens of this difficult genus much easier.

KEY TO FAMILIES AND GENERA OF BARNACLES KNOWN TO OCCUR IN PERU.

a¹. Sessile barnacles.

b¹. Walls symmetrical, conic, or subcylindrical; movable or opercular plates paired.....Family BALANIDÆ.

c¹. Wall composed of four compartments (the sutures sometimes obliterated externally).....Genus *Tetraclita*.

c². Wall composed of six compartments.

d¹. Rostral compartment having overlapping radial areas at the sides,
Genus *Balanus*.

d². Rostral compartment having side wings or alæ overlapped by the adjacent lateral compartments.....Genus *Chthamalus*.

b². Walls asymmetrical; only two dissimilar movable plates,

Family VERRUCIDÆ.

Genus *Verruca*.

*a*². Stalked or pedunculate barnacles.

*b*¹. Peduncle scaly; capitulum composed of many stout plates,

Family SCALPELLIDÆ.

Genus *Mitella*.

*b*². Peduncle nude.....Family LEPADIDÆ.

*c*¹. Capitulum covered by five large thin plates.....Genus *Lepas*.

*c*². Plates of the capitulum very small or wanting.....Genus *Conchoderma*.

Family BALANIDÆ.

Genus TETRACLITA Schumacher.

Acorn barnacles composed of four compartments, externally calcified together, obliterating the sutures in some species; permeated by pores in several rows; base flat, calcareous or membranous.

The single Peruvian species is readily distinguished from *Balanus* by the absence of external sutures and the thick spongy walls.

TETRACLITA POROSA (Gmelin).

Plate 16, fig. 2.

1791. *Lepas porosa* GMELIN, Syst. Nat., 13th ed., p. 3212.

1854. *Tetraclita porosa* Gmelin, DARWIN, Monograph on the Cirripedia, Balanidae, p. 329.

Locality.—Payta (Dr. W. H. Jones, U. S. Navy).

The barnacle is rounded-oval in contour, conic, with a rather small orifice. The sutures are obliterated externally, though visible inside, and the outer layer of the wall is removed in adult shells, leaving the surface peculiarly tessellated by exposure of the ends of the filled-up pores. The wall, viewed from the base, is seen to be reduced to a spongy texture by the crowded pores. The usual size is about 30 mm. long, 12 to 15 high. The opercular plates are triangular, as in *Balanus*.

Genus BALANUS Da Costa.

Acorn barnacles with walls composed of six compartments, the side areas or radii of the rostrum overlapping the alæ of the adjacent lateral compartments; lateral compartments with alæ on the rostral, radii on the carinal sides; walls permeated by usually only one row of pores or none; rostrum with alæ only. Opercular plates triangular, the scutum and tergum interlocking.

Besides the following species, several others will probably, from their known distribution, be found on the Peruvian coast.^a

^a *Balanus amphitrite nireus* Darwin has been reported from "Peru on *Venus flex.*" by Weltner; but *Venus flexuosa* is a species unknown on the west coast of America, and no other locality on that coast has been recorded for the barnacle in question.

BALANUS TINTINNABULUM (Linnæus).

Plate 16, fig. 3; plate 18, figs. 5-8.

1758. *Lepas tintinnabulum* LINNÆUS, Syst. Nat., 10th Ed., p. 668.1854. *Balanus tintinnabulum* var. *communis* DARWIN, Monograph on the Cirripedia, Balanidæ, p. 195, pl. 1, figs. a, b.

Localities.—Bay of Sechura, about midway between Bayovar and Matababalla, 5 to 6 fathoms. R. E. Coker, April 10, 1907. Pacasmayo, from a chain on the pier. Dr. W. H. Jones, October 9, 1884.

The barnacle varies from cylindrical, with the orifice as large as the base, to conic, volcano shaped. The height is about equal to the carino-rostral length, or sometimes is greater, in which case the basis forms part of the side walls. The largest Peruvian example seen measures 5 cm. high and long. Color varying from crimson to dull purple. Orifice longer than wide, more or less distinctly hexagonal. The parietes are not ribbed. The wide, conspicuous, transversely striate radii are level at the orifice. The sheath is glossy and nearly smooth, and the plates are smooth or weakly ribbed below it (pl. 16, fig. 3).

The tergum is irregularly trapezoidal, the basal and basi-tergal sides about equal. It has a conspicuous sculpture of concentric lamellar ridges, joining by pairs at the occludent margin, and in the intervals fine striæ radiate from the apex. The plate is bent along a longitudinal line of flexure, the tergal third standing at an angle of about 45° with the rest of the surface. The articular furrow is very deep and narrow, the articular ridge high, usually overhanging at its lower end. Adductor ridge high, overhanging toward the tergal side (figs. 6, 8).

The tergum is triangular, its spur long and separated from the scutal angle by fully double its width. The longitudinal furrow is usually reduced to an impressed line by the infolding of its edges. The external sculpture is otherwise like that of the scutum. Inside there is a wide and open articular groove, a strong articular ridge, and a stout rib running to the spur. Crests for the insertion of the depressor muscle are weak or wanting (figs. 5, 7).

This is a common barnacle in all warm seas, probably derived from an oriental center. It is one of the most abundant forms carried on ship bottoms. Whether it reached the west coast of South America by natural means, or was carried there by commerce has not been ascertained. If it proves to be wanting in pleistocene or pliocene deposits of the west coast, the theory of recent introduction may safely be held.

The Peruvian examples seen all belong to the typical form of *B. tintinnabulum*, which was called var. *communis* by Darwin.

BALANUS PSITTACUS (Molina).

Plate 16, figs. 1, 4; plate 18, figs. 1-4.

1782. *Lepas psittacus* MOLINA, Saggio sulla storia naturale del Chili.^a
 1831. *Balanus picos* LESSON, Voyage autour du Monde de la Coquille, Zoologie, vol. 2, pt. 1, p. 445 (Concepcion, Taleahuano, S. Vincent, Chili).
 1854. *Balanus psittacus* DARWIN, Monograph on the Cirripedia, Balanidae, p. 206, pl. 2, figs. 3 a-d (Arica to Chiloe I., Chili).
 1905. *Balanus psittacus* VAYSSIÈRE, Annales de la Faculté des Sciences de Marseille, vol. 15, Fasc. V, p. 161, pl. 1, figs. 1-4 ("Taleahuana," Chili).

Localities.—Pacasmayo (W. H. Jones); Chinha Islands and Pesadores Islands (R. E. Coker); Callao (Weltner).

When typically developed, this barnacle reaches a length of 16 to over 20 cm. It is more or less cylindric, pink or flesh colored, smoothish in old or large examples when not worn, but often showing ribs near the ends of the parietes, showing that the young barnacles are ribbed. The orifice is large and hexagonal or quadrangular. The radii are very broad and transversely striated, and in old shells occupy only the upper portion of the cylinder, the rest being formed of the greatly lengthened base. The sheath is short, and the parietes are smooth inside. The pores which permeate the base and wall (parietes and radii) are often exposed by wear (pl. 16, fig. 1, Pacasmayo).

This large form is what all but the first of the authors cited have described. It is apparently most fully developed on the Chilean coast, where it is fished in about 6 fathoms of water, and is esteemed a delicious food. Only one example from Peru of this large form has come under my notice, the one figured on pl. 16, fig. 1 (Cat. No. 15474, U.S.N.M.). It is less ponderous than Chilean examples. Darwin recorded it from a single Peruvian locality, Arica; but this place is

^a The date of original publication of *B. psittacus* has been in doubt. Darwin's reference is "Molina, Hist. Nat. Chili (1788), vol. 1, p. 223." I have not seen the original edition of Molina's work. Five later editions are in the library of the Academy of Natural Sciences of Philadelphia. The earliest of these is entitled "Versuch | einer | Naturgeschichte | von | Chili. | von | Abbé J. Ignatz Molina. | Aus dem Italiänischen übersetzt, | von | J. D. Brandis, | Doctor der Arzneywissenschaft, | mit einer Landcharte. | mit Churfürstl. Sächsischer Freyheit. | Leipzig, | bey Friedrich Gotthold Jacobäer 1786." In the translator's preface it is stated that the manuscript had been ready for publication since 1784—four years earlier than Darwin's date. *Lepas psittacus* is described on page 179.

A French translation by M. Gruvel D. M. bears date of 1789. *Lepas psittacus* is described on pages 179 and 328. An American edition translated "by an American gentleman" appeared at Middletown, Conn., in 1808, and an English edition, apparently taken from the American, in 1809. The natural history matter seems to be practically identical in all of these editions. The second Italian edition, Bologna, 1810, evidently contains extensive interpolations, and the systematic list of animals is omitted; but in the preface the date of the original edition is given as 1782.

now on Chilean territory. Besides the large form there is also on the Peruvian coast a littoral form of *B. psittacus*, which agrees better with Molina's description than the large form hitherto considered typical.

Examples from Chincha Islands, "abundant on the shore rocks" and Pescadores Islands, collected by R. E. Coker, are small, though clearly adult. They measure 3.5 to 4.5 cm. high, 2.5 to 3.5 in basal diameter. The shape is conic or vertical sided; parietes irregularly ribbed, radii rather wide. The orifice is ovate, or angular at the sides and truncate at the rostral end. The color is dull whitish gray, sometimes partly dull pink. The parietes are ribbed lengthwise inside below the sheath. The base is as flat as circumstances permit, and either forms no part of the side walls, or is but slightly excavated.

A group from the Chincha Islands, No. 38692 U.S.N.M., is figured, of the natural size (pl. 16, fig. 4).

The scutum is trapezoidal, the basi-tergal side parallel to the occludent and about as long as the basal margin. The tergal third is bent at an angle of about 45° with the rest of the surface. The apical third or fourth of the surface is smooth, the rest sculptured with concentric lamellæ and radial striæ which crenulate the edges of the lamellæ. Inside there is a deep and narrow articular groove and a high acute articular ridge, which is confluent below with the adductor ridge. The latter continues nearly to the base, arching over a cavity which penetrates nearly to the apex. The adductor muscle scar is well marked (figs. 3, 4).

The tergum is long and narrow, terminating in a long beak, from one-third to one-fourth the length of the plate. The spur is long and narrow, near the scutal margin. The longitudinal groove has its sides closely folded together. The surface is sculptured otherwise like the scutum. Inside, the articular ridge overrides the rib running to the spur. Between this ridge and the carinal edge there is a short narrow longitudinal ridge. The ridges and the space between them are purple. There are no crests for the depressor muscles (pl. 18, figs. 1, 2, Chincha Islands).

While it is related to *B. tintinnabulum* by the porous walls and base, *B. psittacus* is very distinct by the narrow, long-beaked tergum and the arched-over cavity of the scutum. The opercular plates, in place, have the shape of a parrot's beak.

BALANUS CONCAVUS Bronn.

1838. *Balanus concavus* BRONN, Lethæa Geognostica, Vol. 2, p. 1155, pl. 36, fig. 12.

1854. *Balanus concavus* BRONN, DARWIN, Monograph on the Cirripedia, Balanidæ, p. 235 (Peru, etc.).

Locality.—Peru (Darwin, Balanidæ, p. 236): Island of S. Lorenzo in a recent elevated beach, 85 feet above the sea (Darwin).

The barnacle is conical, orifice rather small, radii narrow. Surface generally smooth; color dull reddish-purple with whitish or darker rays, pale rose-pink with white rays, or wholly white. Diameter of the largest Peruvian (fossil) specimens about 4 cm. Recent examples are smaller, often about 15–20 mm. in diameter.

The scuta are striated longitudinally, beading or denticulating the transverse costulae. Articular ridge rather small; adductor ridge usually very prominent.

Terga very slightly beaked. There is a longitudinal furrow, usually deep, with the edges folded in and touching, extending down to the spur.

This species may be distinguished from *B. amphitrite* by the longitudinal striation of the scuta.

BALANUS LÆVIS NITIDUS Darwin.

Plate 17; plate 19, figs. 5–9.

1854. *Balanus laevis* BRUGULÈRE var. *nitidus* DARWIN, Monograph on the Cirripedia, Balanidae, p. 227, pl. 4, fig. 2 (Chili, Peru, California).

Locality.—Arica, on the gastropod *Concholepas peruviana* Lamarck; San Lorenzo Island, on pebbles at low tide (Dr. W. H. Jones, U. S. Navy); Peru, on *Concholepas* (coll. Acad. Nat. Sci. Phila.).

The barnacle is nude, not covered with a cuticle, conic, white or pale purple, or marked with purple lines near the summit; smoothish, with very narrow radii. Orifice small, ovate or trapezoidal, with an even, not toothed, margin. The parietes and calcareous base are porous; the purple lines often visible near the summit being caused by a purple calcareous filling of the parietal pores. The size varies from a carino-rostral diameter of 8 to 16 mm., the height being about the same, or in large crowded groups they may become higher.

The scutum is triangular, the basal and tergal margins of about equal length. Surface covered with a yellow cuticle, to which remains of old cuticle generally adhere; sculptured with fine transverse riblets and having one or two deep longitudinal furrows. Inside, the articular groove is narrow and deep, the articular ridge high and strong, projecting in a point below. The adductor ridge is massive and strong. The pit for the insertion of the lateral depressor muscle is very deep, passing almost or quite through the calcareous layer of the plate (figs. 6, 8, 9).

The tergum has a broad spur, truncated at the end and nearly half as wide as the whole plate. The longitudinal furrow is wide, with the edges narrowly folded in. Surface elsewhere finely costulate parallel to the basal margin. Inside there is a moderate articular furrow and strong articular ridge. The crests for the depressor muscles are strongly developed (figs. 5, 7).

This barnacle grows on the shell of the gastropod *Concholepas peruriana* Lamarck, wholly covering the outer surface, as shown in pl. 17, showing dorsal and ventral aspects of two shells so overgrown. The barnacle profits no doubt by riding a gastropod, but whether the *Concholepas* benefits by the protection afforded is somewhat in doubt. It is distinguished from *B. lewis* Bruguière, of more southern waters, chiefly by the diminished size and absence of cuticle over the outer walls. *B. l. nitidus* is usually quite nude, but occasionally retains some of the cuticle around the base of the walls. The furrows of the scutum are characteristic and present in very many individuals I have examined, but Darwin mentions finding individuals without the grooves.

BALANUS PERUVIANUS, new species.

Plate 19, figs. 1-4.

Locality.—Salt creeks at La Palasada, near Tumbes, growing on mangroves.

Cotypes.—Cat. Nos. 38691 and 38692, U.S.N.M.

A species of Darwin's Section D. The parietes are permeated by pores near the base; the radii and base are not porous.

General form conic, with flat or concave base and rather small aperture; dirty purplish white or dull purple; very solid and strong. The parietes are smoothish, without ribs, and only minutely roughened; radii narrow, their summits sloping steeply; summits of the alæ also steeply sloping. The aperture is pentagonal, with a strongly notched margin. The sheath is horizontally regularly ribbed, each rib bearing a row of short bristles pointing upward. Below the sheath the surface is strongly ribbed vertically.

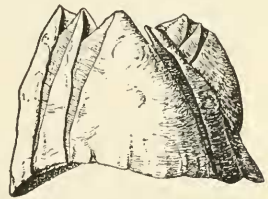


FIG. 1.—BALANUS PERUVIANUS,
LATERAL VIEW.

The scutum is triangular, nearly half as wide as long. It is white inside, dirty whitish outside, suffused with dull purple near the apex, and with a narrow streak of the same near the tergal margin. The basal margin is slightly curved, and the basotergal angle is rounded off. The surface is sculptured with flat, slightly overhanging concentric ribs parted by narrower intervals. There are no radial striae. Inside there is a strong and very high articular ridge, a much lower adductor ridge joining it, and rapidly diminishing downward. Articular furrow deep. The cavity of the adductor muscle is very deep (figs. 3, 4).

The tergum is bicolored, the scutal half white, carinal half dull purple. The spur is short, wide, and obliquely truncate at the end. Its width is contained about two and a half times in the length of

the basal margin. The outer face of the plate is flat, except that the scutal border is turned up a little; there is no longitudinal furrow, but two impressed lines run from apex to the sides of the spur. The surface is marked with concentric striæ and low, flattened riblets, much less conspicuous than on the scutum. There are also numerous unequal radial striæ, chiefly on the carinal half of the plate, and mostly rather weak. Inside there is a broad and rather deep articular furrow and a massive though not high articular ridge. The crests for the depressor muscle are high, acute, and project beyond the basal margin of the plate. The carinal half of the interior is finely rugose throughout.

Carino-rostral length of the base 31 mm.; width, 28.5 mm.; height, 23 mm. Length of the scutum, 10.5 mm.; width, 5 mm. Length of the tergum, 8 mm.; width, 5 mm.

This species is related to *B. glandula* Darwin of California. It differs from that species chiefly by the shape of the scutum, which is narrower than in *B. glandula*, and differs in the shape and proportions of the ridges of the interior. (Compare Darwin, *Balanidae*, pl. 7, fig. 1a). *B. glandula*, moreover, has the "walls rugged, longitudinally folded." *B. trigonus* Darwin differs by having rows of pits on the scutum and longitudinal ribs on the parietes. It is almost identical with *peruvianus* in the shapes of the opercular plates.

The pores of the parietes are filled up except close to the base, and might readily be overlooked. The base is solid. In these features *B. peruvianus* resembles *B. glandula* and *B. trigonus*. Unlike *B. patellaris* (Spengler), the base curves to fit the shape of the support.

BALANUS TRIGONUS Darwin.

1854. *Balanus trigonus* DARWIN. Monograph on the Cirripedia, Balanidae, p. 223, pl. 3, figs. 7a-7f.

Locality.—Peru, without special locality (Darwin). Also reported from California, Australia, and New Zealand (Darwin). The original description by Darwin is as follows:

Shell conical, generally depressed; parietes ribbed, mottled purplish red; orifice broad, trigonal, hardly toothed. Scutum thick, with from one to six longitudinal rows of little pits. Tergum without a longitudinal furrow; spur truncated, fully one-third of the width of valve.

The scutum and tergum resemble those of *B. peruvianus* in outline, but differ in sculpture. No definite locality in Peru has been recorded.

Genus CHTHAMALUS Ranzani.

Barnacles like *Balanus* in general appearance, but the rostrum has aæ, or underlying side areas, while in *Balanus* these areas lie over the adjacent edges of the lateral compartments. They are small

and almost always very deeply eroded, dull and gray, with little of the original surface remaining on the exterior of either wall or movable plates. The specific characters are most clearly exhibited in the shape of the scuta, or larger opercular plates.

CHTHAMALUS CIRRATUS Darwin.

1854. *Chthamalus cirratus* DARWIN, Monograph on the Cirripedia, Balanidae, p. 461, pl. 18, figs. 4a, 4b.

Localities.—Northeast side of San Lorenzo Island, shore, on rocks; Pescadores Islands, on *Balanus psittacus* Molina (R. E. Coker).

The barnacle is small, diameter of base 10 to 13 mm., and usually low, irregular in contour, the individuals often crowded, forming a crust on the rocks. When free the peripheral portion is costate and strongly crenated or toothed at the edge. The upper part of the wall

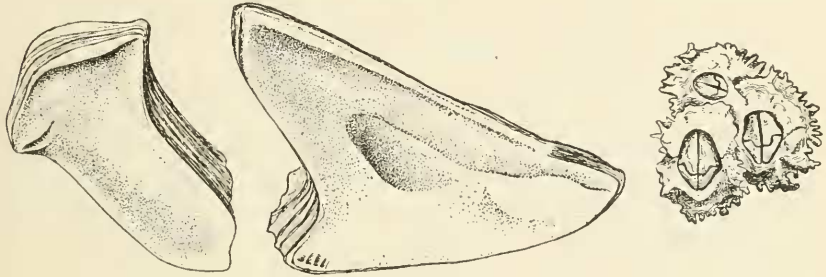


FIG. 2.—CHTHAMALUS CIRRATUS. INSIDE VIEWS OF TERGUM AND SCUTUM ENLARGED, AND GROUP OF THREE ENTIRE ANIMALS, NAT. SIZE.

and the opercular plates are deeply eroded, dull gray. The sutures are obliterated. The orifice is rather large. The interior is dull purplish.

The sutures of the opercular plates form a figure the shape of the Greek letter Ψ . The scutum is triangular, the articular groove making a deep notch at the tergal side. Articular ridge well developed. The adductor muscle impression is very deep. The tergum has a ridge inside along the upper and scutal margins. The baso-carinal angle projects. There are two very short crests for the insertion of the depressor muscles.

This species is most readily recognized by the shapes of the terga and scuta, both differing conspicuously from those of *C. scabrosus*. According to Darwin, large specimens from Coquimbo and Valparaiso have a height of 1 inch with a basal diameter of half as much. All of those I have seen from Peru are depressed.

CHTHAMALUS SCABROSUS Darwin.

1854. *Chthamalus scabrosus* DARWIN, Monograph on the Cirripedia, Balanidae, p. 468, pl. 19, fig. 2.

Locality.—Peru to Falkland Islands (Darwin).

The barnacle is dull purplish brown when well preserved, dirty gray when eroded; surface generally rugged.

According to Darwin the opercular plates generally have their summits much worn down. The scuta are elongated in the line of the longer axis of the orifice; the articular ridge is very prominent, and is placed in the middle of the tergal margin. The terga are very narrow; they are remarkable in two respects, namely, in the depressor muscle being attached to a plate formed apparently by the union of the usual crests, parallel to the outer lamina of the valve itself, a deep narrow cavity being thus formed; and secondly, in the far more extraordinary circumstance of the existence of a small pit at the extreme basi-scutal corner of the valve, in which about half of the scutal lateral depressor muscle is attached.

No definite locality in Peru has been recorded.

Family VERRUCIDÆ Darwin.

Genus VERRUCA Schumacher.

Sessile, box-like cirripedes, with a shell composed of six plates. Scuta and terga without depressor muscles, movable only on one side, on the other immovably united with the rostrum and carina into an asymmetrical shell.

VERRUCA LÆVIGATA (Sowerby).

1826. *Clitia larrigata* SOWERBY, Genera of Recent and Fossil Shells, figs. 1, 3.

1854. *Verruca larrigata* Sowerby, DARWIN, Monograph on the Cirripedia, Balanidae, p. 520, pl. 21, fig. 3.

Locality.—Tierra del Fuego to Peru, attached to shells and to Balanus (Darwin). Tumbes (Weltner).

Family SCALPELLIDÆ.

Genus MITELLA Oken.

Valves of the capitulum from 18 to over 100 in number, all with the umbones apical above; latera of the lower whorl numerous. A sub-rostrum always present. Peduncle closely scaly. These barnacles live attached to fixed, or rarely, floating objects.

MITELLA ELEGANS (Lesson).

1831. *Pollicipes elegans* LESSON, Voy. autour du Monde de "la Coquille" Zoologie, pl. 2, p. 441; Illustrations Zoologiques, pl. 39.

1851. *P. elegans* Lesson, DARWIN, Monograph on the Cirripedia, Lepadidae, p. 304.

Locality.—Payta, on piles (Lesson); Lobos Island (Cuming).

The capitulum has two or more rows of valves under the rostrum. Valves and scales of the peduncle are reddish orange, the latter symmetrically arranged in close whorls.

Family LEPADIDÆ Darwin.

Genus LEPAS Linnæus.

Valves 5, approximate, thin; carina extending up between the terga, terminating below in an embedded fork or external disk; scuta subtriangular, umbones at the rostral angle; caudal appendages unarticulate; peduncle long and nude.

Common barnacles in all seas, on floating objects such as buoys, driftwood, or ships' bottoms. Most of the species are almost world-wide in distribution. The following key includes those likely to be found on the Peruvian coast, though up to this time only two species have actually been recorded.

KEY TO SPECIES.

- a*¹. Carina terminating below in a flat oblong external disk, umbo angularly projecting; valves thin, papery-----*L. fascicularis*.
- a*². Carina terminating below in a fork, umbo basal; valves well calcified.
- b*¹. Valves radially furrowed or strongly striate.
- c*¹. Occludent margin of the scutum arched, protuberant-----*L. anserifera*.
- c*². Occludent margin close to the ridge from the umbo to the apex,
L. pectinata.
- b*². Valves smooth or very minutely striate radially.
- c*¹. Valves smooth or delicately striate; an internal umbonal tooth on the right-hand scutum-----*L. anatifera*.
- c*². Valves not striate radially; no internal umbonal teeth on the scuta,

LEPAS ANATIFERA Linnæus.

1907. *Lepas anatifera* Linnæus, PILSBRY, Cirripedia of the U. S. National Museum, Bull. U. S. Nat. Mus. No. 60, p. 79, pl. 9, figs. 3-5.

Locality.—Chincha Islands, abundant on bottoms of "lanchas" (lighters) used in embarking guano (R. E. Coker).

LEPAS PECTINATA Spengler.

1907. *Lepas pectinata* Spengler, PILSBRY, Cirripedia of the U. S. National Museum, Bull. U. S. Nat. Mus. No. 60, p. 81, pl. 8, figs. 4-8.

Locality.—Peru, without special locality (Weltner).

Genus CONCHODERMA Olfers.

Nude cirripedes, with the peduncle long, capitulum generally striped or maculate, with two to five small vestigial widely separated plates; scutum at base of the orifice, two or three lobed, with the umbo near the middle on the occludent border; carina narrow

arched, with the two ends nearly alike, umbo near the middle; sometimes it is wanting; terga small or, in adults, sometimes wanting. Lateral filaments numerous; mandibles with five finely pectinated teeth; maxillæ with distinct steps. Caudal appendages none. Cirri with the spines arranged comb-like.

These pelagic forms live on whales' "bonnets," turtles, the bottoms of ships, buoys, etc. The two species are nearly or quite world-wide in distribution. *C. virgatum* is a handsomely striped form, with the plates rather well developed, though small, and without fleshy ear-like processes. It has been reported from Iquique, Chile, and from California. While not yet known from Peru, it doubtless occurs on that coast. *C. auritum* is readily known by the two large "ears" rising behind the positions of the terga. The terga and carina are very small, sometimes absent in adults.

CONCHODERMA AURITUM (Linnæus).

1907. *C. auritum* Linnæus, PILSBRY, Cirripedia of the U. S. National Museum, Bull. U. S. Nat. Mus., No. 60, p. 99, pl. 9, fig. 2.

Locality.—Tumbez, on *Coronula diadema* growing on a whale (Weltner).